

|     | Value                         | s | e...                             | f...         |
|-----|-------------------------------|---|----------------------------------|--------------|
| 110 | $+\infty$                     | 0 | 111...                           | 000...       |
| 120 | $-\infty$                     | 1 | 111...                           | 000...       |
| 130 | NaN                           | X | 111...                           | Not (000...) |
| 140 | $+0$                          | 0 | 000...                           | 000...       |
| 150 | $-0$                          | 1 | 000...                           | 000...       |
| 160 | $(-1)^s 2^{e-bias}(1.f...)$   | X | Not (000...) and<br>Not (111...) | X            |
| 170 | $(-1)^s 2^{e-bias+1}(0.f...)$ | X | 000...                           | Not (000...) |

X = Don't Care

FIG. 1 (Prior Art)

|     | OPERATION                                       | FIRST<br>OPERAND                                                                 | SECOND<br>OPERAND                                                                | IEEE<br>Result                                       | Improved<br>Result                                                               |
|-----|-------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------|
| 205 | FP ADDITION<br>w/ Round toward<br>+ $\infty$    | - $\infty$<br>+ $\infty$                                                         | + $\infty$<br>- $\infty$                                                         | NaN<br>NaN                                           | + $\infty$<br>+ $\infty$                                                         |
| 206 | FP ADDITION<br>w/ Round toward<br>- $\infty$    | - $\infty$<br>+ $\infty$                                                         | + $\infty$<br>- $\infty$                                                         | NaN<br>NaN                                           | - $\infty$<br>- $\infty$                                                         |
| 207 | FP SUBTRACTION<br>w/ Round toward<br>+ $\infty$ | + $\infty$<br>- $\infty$                                                         | + $\infty$<br>- $\infty$                                                         | NaN<br>NaN                                           | + $\infty$<br>+ $\infty$                                                         |
| 208 | FP SUBTRACTION<br>w/ Round toward<br>- $\infty$ | + $\infty$<br>- $\infty$                                                         | + $\infty$<br>- $\infty$                                                         | NaN<br>NaN                                           | - $\infty$<br>- $\infty$                                                         |
| 210 | FP MULT<br>w/ Round toward<br>+ $\infty$        | + $\infty$<br>- $\infty$                                                         | - 0<br>+ 0                                                                       | NaN<br>NaN                                           | - 0<br>- 0                                                                       |
| 215 | FP MULT<br>w/ Round toward<br>- $\infty$        | + $\infty$<br>- $\infty$                                                         | - 0<br>+ 0                                                                       | NaN<br>NaN                                           | + 0<br>+ 0                                                                       |
| 220 | FP DIV<br>w/ Round toward<br>+ $\infty$         | - $\infty$<br>+ $\infty$<br>+ 0<br>- 0<br>- $\infty$<br>+ $\infty$<br>- 0<br>+ 0 | + $\infty$<br>- $\infty$<br>- 0<br>+ 0<br>- $\infty$<br>+ $\infty$<br>- 0<br>+ 0 | NaN<br>NaN<br>NaN<br>NaN<br>NaN<br>NaN<br>NaN<br>NaN | - 0<br>- 0<br>- 0<br>- 0<br>+ $\infty$<br>+ $\infty$<br>+ $\infty$<br>+ $\infty$ |
| 225 | FP DIV<br>w/ Round toward<br>- $\infty$         | + $\infty$<br>- $\infty$<br>- 0<br>+ 0<br>+ $\infty$<br>- $\infty$<br>+ 0<br>- 0 | - $\infty$<br>+ $\infty$<br>+ 0<br>- 0<br>+ $\infty$<br>- $\infty$<br>+ 0<br>- 0 | NaN<br>NaN<br>NaN<br>NaN<br>NaN<br>NaN<br>NaN<br>NaN | - $\infty$<br>- $\infty$<br>- $\infty$<br>- $\infty$<br>+ 0<br>+ 0<br>+ 0<br>+ 0 |

FIG. 2

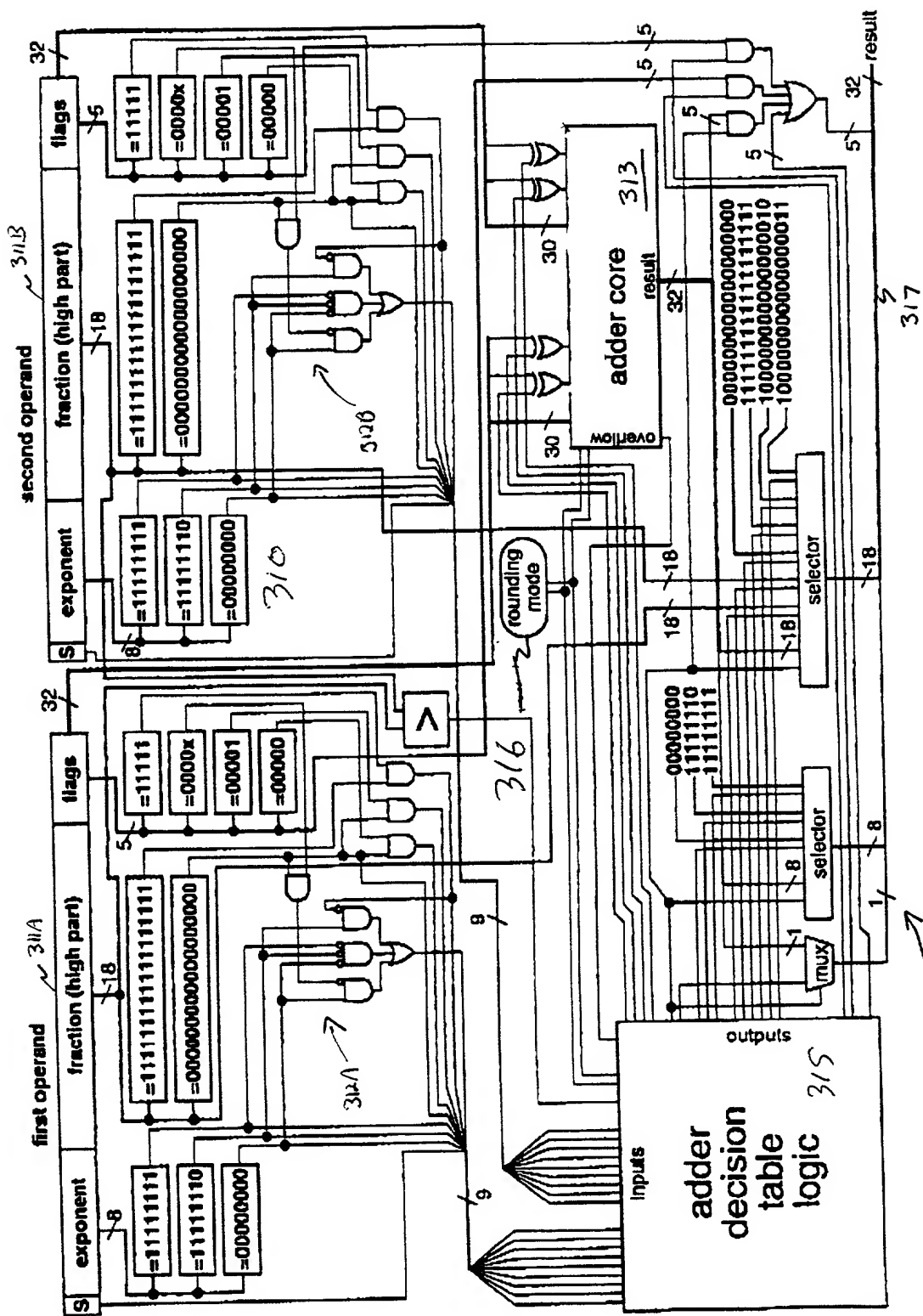


FIG. 3

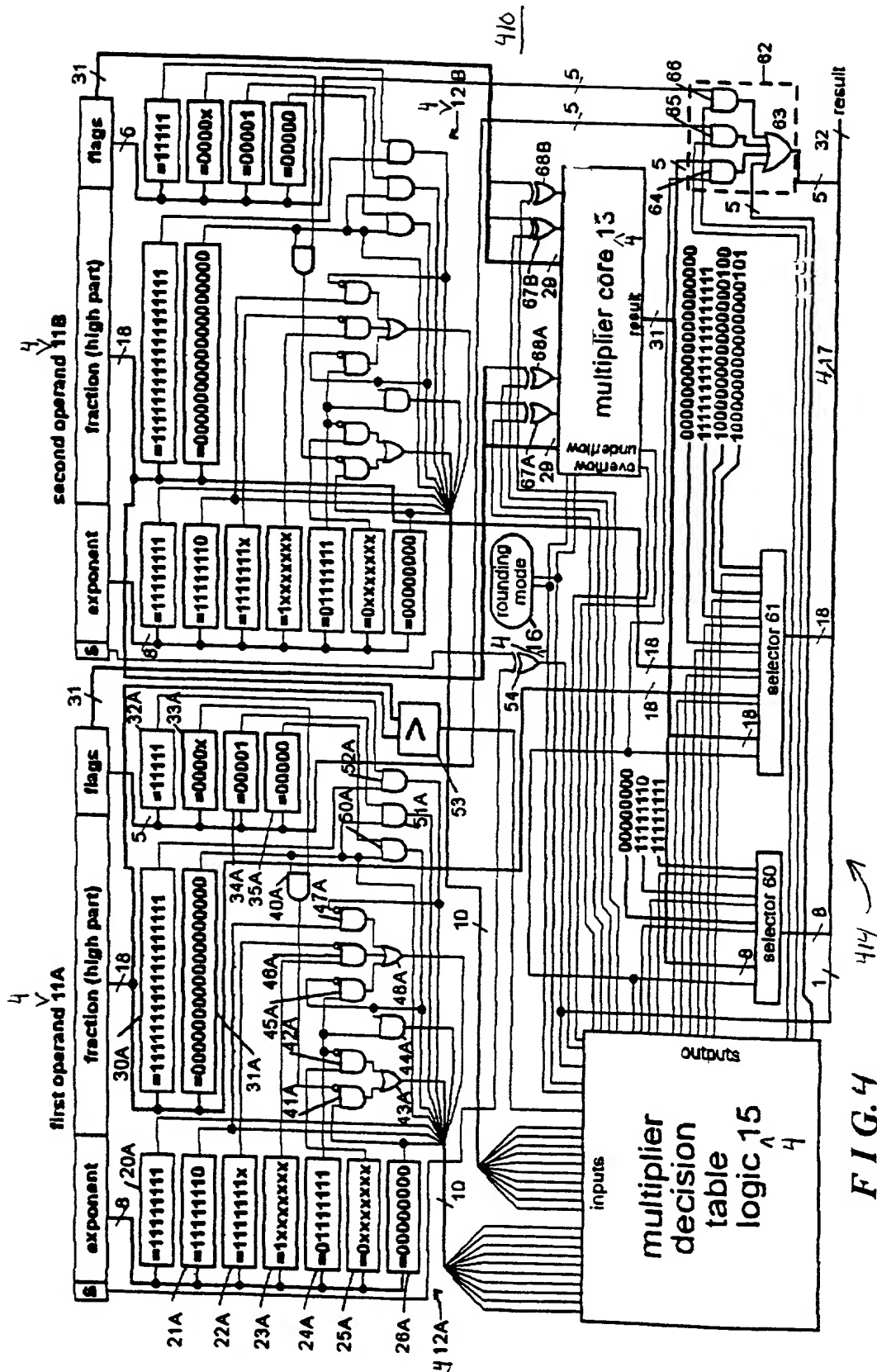


FIG. 4

